Assessing Methodologies Employed by U.S. Companies to Establish Business Benefits of Information Systems

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ASSESSING METHODOLOGIES EMPLOYED BY U.S. COMPANIES TO ESTABLISH BUSINESS BENEFITS OF INFORMATION SYSTEMS

I. BACKGROUND AND METHODOLOGY

A. Background

The Institute for Future Technology (IFT) wishes to understand the use of methodologies by U.S. business to identify the business benefits ("usage values") of information systems (IS).

Business benefits are in contrast to technical benefits. Technical benefits include such factors as: IS cost savings, processing times, system quality/errors, changes in system maintainability.

Business benefits include (but are not limited to) such factors as:

- Increases in revenue
- Increases in profit or other operating measures
- Improved responsiveness to customers
- Improved customer satisfaction
- Improved quality of products or services
- Improved productivity, including reduction in cycle times
- Improved information (for customers, operating management and/or executive management)

IFT wishes to understand to what extent individual U.S. companies

- Take business benefits into account when evaluating or justifying large systems investments (either new systems or significant modifications to existing systems)
- Use a consistent methodology to evaluate business benefits

IFT also wants to understand the types of methodologies in use and the type of factors used for evaluations.

B. Methodology

INPUT collected most of the information contained in this report from structured interviews with U.S. companies with over $500 million in sales. Information was obtained using a questionnaire (shown in Appendix A). This questionnaire was reviewed with IFT before the interviews were conducted.

INPUT's contract with IFT specified that 15 companies were to be interviewed. In fact, 26 companies were interviewed. Additional companies were interviewed (at no additional cost) in order to have a large enough sample to perform the additional analysis contained in this report.

The companies interviewed were spread across major sectors (Exhibit I-1). The actual companies interviewed are in Exhibit II-2.

The people interviewed were those who were knowledgeable about the planning and assessment process in their organization. Most of these had the title of "Manager" or above (see Exhibit I-3); in some organizations the knowledgeable person was a staff planning specialist.

The respondents were forthcoming and answered questions to the best of their knowledge.

The interviews focussed on larger systems investments: the average investment cited by respondents was over $3 million.

In addition to the information obtained from these interviews, INPUT has also drawn on its general experience and on other pertinent studies in making observations on overall trends and planning practices.

A draft of this report was prepared on February 5 and sent to IFT for review. This report incorporates answers to IFT questions as well as containing descriptions of eight referenced products.

II. IMPORTANCE OF ASSESSING BUSINESS BENEFITS AND THE USE OF METHODOLOGIES

One of the key issues is the extent to which organizations are using (or trying to use) business benefits, rather than technical benefits, to evaluate systems investments. Exhibit II-1 contrasts the two types.

- There is some overlap between these two types of benefits. For example, IS cost savings can contribute to increased profitability, if these savings are large enough. However, in most cases, the IS savings are not large enough to have a material effect on the overall business.
- The major area where a purely IS decision can have a material effect on the rest of the business is where there is disinvestment, rather than investment. Specifically, where large parts of an IS operation are outsourced to a third party vendor and IS assets are sold to the third party at a profit. This type of activity is outside the scope of this study and, more importantly, is a totally different sort of evaluation that generally only occurs once in a period of many years.

In order to judge -- and quantify -- the relative importance of technical versus business benefit evaluations INPUT had each respondent in an interview weight the importance of each up to a total of 100%; this process is illustrated in Exhibit II-2. Respondents were asked to rate their organizations for 1992 and make an estimate for 1997.

Exhibit II-3 summarizes the results of these rankings:

- Five out of 25 respondents saw business benefits as accounting for over 90% of the evaluation activities in their firm.
- An additional 10 companies put the business benefit ranking in the 70-85% category.
- Only 6 companies rated business benefits under 50%
- The importance of business benefits is seen by respondents as becoming slightly more important over the next five years

In INPUT's experience this represents a considerable change from ten years ago, when significant systems investments were far more likely to be evaluated almost wholly on technical issues.

Based on other INPUT research, these changes in evaluation methodologies are consistent with other changes going on in IS:

- There is more decentralization generally in U.S. organizations.
- Related to the above, central IS organizations have considerably less power and influence than in the past.
- Centrally-controlled IS budgets are, in general, only increasing at the rate of inflation; some are falling in absolute terms.
- End user or functional departments are much more active in making decisions on applications.
- "Pure technology" investments are generally out of favor; systems investments must been seen as having a positive impact on the business.

As Exhibit II-4 shows, about one-quarter of the respondents still use technical evaluation as their predominant evaluation method. However, over half of respondents are using business benefits as the predominant means of evaluation. About one-quarter of companies do not use a methodology at all but respond to each situation on an ad hoc basis (that is, they deal with each situation as it arises).

As noted on Page 1 of this report, this report does not discuss or analyze the way in which technical benefits are evaluated. Technical evaluations are very dependent on software tools which analyze computer and network performance. As additional information to IFT, Appendix B contains information on products from one of the best known software vendors, BGS, which supplies technical evaluation software.

Even where methodologies are used, only a minority of companies now use a single, consistent methodology (Exhibit II-5).

A single, consistent methodology is far more likely to be used as part of a financial model than any other type of methodology (Exhibit II-6). As will be discussed later in the report, there are advantages to using variable methodologies.

III. BUSINESS BENEFIT EVALUATION

The overwhelming majority of respondents have found business benefit evaluations useful (Exhibit III-1).

- Even where an evaluation can only deal with part of the business benefit, the process still provides much useful information.
- In some companies the analytic process that is gone through is just as useful as the results of the process.

Exhibit III-2 summarizes the relative importance of the different kinds of business benefits, by showing the percentage of respondents that rated the benefit a "4" or a "5" on a scale of 5. Every respondent gave a rating for each one of the items listed under "Potential Business Benefit". For example, 81% of the respondents rated "Increased productivity" as a "4" or a "5" on a scale of 5. The other 19% of respondents gave a rating of "1", "2" or "3".

Interestingly, the three lowest ranked are those that are the easiest to measure. This is analyzed immediately below.

Some benefits, such as revenue or market share, are easy to measure. Others, that may be equally important, such as improved information or improved customer satisfaction may be much more difficult to measure satisfactorily.

On the other hand, the impact of IS investments may be direct or indirect. That is;

- A direct benefit of an IS investment may be lower inventory levels that can be traced accurately to IS changes.
- On the other hand, increased revenues are often the result of many initiatives within a firm. It may be very difficult to attribute a particular portion of this solely to IS activities. However, these indirect benefits may be very important also.

The responses were further analyzed to see if there were any other factors mentioned. There were other items brought up but they were not applicable:

- A few respondents reintroduced technical factors, which had been intentionally excluded from the analysis.
- Some respondents went into more detail on what attributes were being measured (e.g., number of prescriptions filled).
- A few other respondents gave general responses such as "supporting business objectives" after they had already provided more informative detailed answers.

It is not surprising that there were no additional categories of criteria volunteered. The choices provided in the questionnaire were very inclusive.

Exhibit III-3 is a matrix showing the four possible combinations of relationships described above. Each "cell" in the matrix is analyzed in more detail in Exhibits III-4 through Exhibit III-7.

- Each of these exhibits analyzes and discusses the major types of business benefits (which are underlined) within each group.

- As can be seen, important business benefits fall within each group.

The importance of a particular business benefit (or a series of benefits) may vary significantly, even within the same company:

- Corporate goals and objectives may change (e.g., from market share to profitability).
- Different user departments often have different objectives (or place different weights on the same series of objectives).
- There may be a series of evaluations to pass.
  - For example, a systems investment may have to first prove that it can pass a hurdle for a financial rate of return.
  - After that has been achieved, then other, more qualitative factors, may be used to give the investment a priority.

Large systems projects must always be evaluated as to their financial rate of return. This may be within the evaluation of an overall change in function, i.e., changes to the manufacturing or distribution process, where the IS investment is one of several investment components. Smaller projects may not be evaluated in financial terms especially if a change is considered to be unavoidable. Examples:

- Changes to regulations or government reporting requirements which are mandated by law
- Errors in software which must be fixed to enable an application to continue to support the business unit. These are generally small on an individual basis, but very large when added up in the course of a year; the typical U.S. company spends over half of its budget for IS personnel on this type of activity. Much of this is considered to be a cost of doing business and is not separately evaluated. This was the reason why INPUT generally limited its analysis to "new systems or significant modifications to existing systems" (page 1 of the report).

IV. METHODOLOGIES USED TO ESTABLISH BUSINESS BENEFITS

A. Methodologies Used to Assess IS Investments

INPUT has used the classification format shown in Exhibit III-4 to classify the business benefits identified in Exhibit III-2. The result is shown in Exhibit IV-1.

- Only two benefits, productivity and cost savings are both direct and measurable.
- The other benefits are indirect and/or difficult to measure. As noted earlier, these can be very important benefits, but evaluating them in a consistent way can be difficult.

Note: In financial analysis, the terms "tangible" and "intangible" benefits are commonly used.

- "Tangible" is equivalent to "measurable".
- "Intangible" is equivalent to "difficult to measure".

A financial model is fairly straightforward. Exhibit IV-3 describes the mechanisms involved. The most difficult aspect of the financial model is to accurately quantify the benefits involved:

- Are the benefits in fact direct?
- How likely are the benefits to actually occur?
- How long should benefits be counted as flowing from IS initiatives, as opposed to being driven by continued general improvements to business practices?

Quantification of benefits can be assisted by such devices as market surveys and data bases of historic performance. However, there is always a large element of judgment involved.

The financial models used fall into these categories:

- Commercially-supplied financial planning software packages. Examples of these are shown in Exhibit IV-4.
- Internally-developed software.

All of the financial models are driven by the mechanism described in Exhibit IV-3 -- The organizations financial records (organized by a "chart of accounts" in a "general ledger" is passed into the financial planning system.

All the models allow for different types of financial and statistical processes to be applied to different simulations and assumptions. Financial tests can include the following:

- Present value ($)
- Future value ($)
- Internal rate of return (expressed as a %)
- Payback (expressed in months or years)

A company generally only uses one type of test. They are all driving by the same parameters and generally are measuring the time value of money.

All the software packages are driven off the same general theory, described above. The main differences are:

- The complexity of the organization they are aimed at. Some companies have many departments and many layers of organizations. Companies like that place a high value on the ability of a model to consolidate results from many intermediate units, with different currencies, etc. These complex models will offer a wealth of financial and statistical functions to be used by sophisticated financial analysts.

- Smaller projects, whose effects are limited to a self-contained organizational, will often use a less sophisticated model in an easier-to-use software package.

The output of models can be expressed in dollars (and/or other currency units), percent returns and/or time to payback. As mentioned above, these measures as essentially interchangeable, although financial planners may have very strong opinions on the advantages and disadvantages of each.

Cost/benefit analysis are driven by the particular situation. Unlike financial models, there are not standard, commercially-available products that can be purchased. This is because having an understanding of the business issues is more important than the particular methodology employed.

Exhibit IV-5 is a key to detailed product information contained in appendixes. Note that there are demonstration diskettes for three of these products.

U.S. businesses often employ a consulting firm to perform these kinds of cost/benefit analyses when evaluating systems investments. Major firms involved in this type of activity include:

- Andersen Consulting
- Booz Allen
- Digital Equipment (consulting division)
- IBM (consulting division)
- McKinsey & Co.
- Price Waterhouse

None of these firms has a single methodology that is used to assess costs and benefits, although all use financial models to capture direct/measurable benefits.

- Their strengths are having an in-depth knowledge of an industry and being able to apply lessons learned from other companies in the same industry as a client for whom they are performing the evaluation.

- They view their collection of project information has highly proprietary.

One consulting firm, DMR, represents are partial exception to this practice. Up to now, much of their systems evaluation activity has been similar in nature to the activities of the consulting organizations listed above. However, they are in the process of developing a methodology to show the broader impact of systems on business. Additional information on DMR's approach, "Productivity Plus", as well as on the firm in general is in Appendix I.

B. Process for Evaluating Business Investments Generally

The process for evaluating business investments generally is very important to understanding systems investments: That is because systems investments are increasingly viewed as being integral to overall business investments.

The evaluation of business investments is generally part of a strategic or business planning process. The relationship of a systems plan to the larger business plan is shown in Exhibit IV-6. The IS organization is rarely the initiator of these strategic consulting assignments (Exhibit IV-7). INPUT's research indicates that large systems projects are almost always preceded by this type of planning (Exhibit IV-8).

The planning involved will almost always use a financial model as one of the analytic components. However, the cost/benefit approach is the more important component.

Exhibit I-1

Sectors Interviewed

Manufacturing/Distribution	8
Financial Services	8
Government/Education	6
Other Services	4
	26

Exhibit I-2

Organizations Interviewed

- Blue Cross/Blue Shield of Maryland
- Carlson Companies - Hospitality Div.
- CUNA Mutual Insurance
- First Wisconsin Trust
- Genetech
- Gold Kist, Inc.
- Indiana Depart of Labor
- Johnson & Johnson - Research Division
- Marine Midland Bank
- Marshall & Ilsley Corp. (Banking)
- Medical Center, Inc.
- Michigan State University
- Missouri Public Safety Div.
- Monsanto
- Mutual of Omaha Insurance
- Nissan Motors USA
- Northern Telecom
- Providence Hospital
- Provident National Bank
- Prudential Insurance
- Texas Tech
- Turner Broadcasting
- U.S. Air Force - McGill AFB
- University of Michigan
- Walgreen Corp.
- Warner Lambert Squibb

Exhibit I-3

Titles of Respondents

Title	Percent of Respondents
Vice President	27%
Director	12%
Manager	42%
Staff Planning Specialist	19%
	100%

Exhibit I-4

Size of System-Related Investments

Average Investment Size	Percent
Under $1 million	35%
$1 - 4 million	35%
$5 million and over	30%

Average (mean): $3.5 million

Exhibit II-1

System Investment Evaluation Criteria

Category	Example
Technical benefits	• IS cost savings
	• Improved processing times
	• Improving system quality
Business benefits	• Revenue or profit increases
	• Improved customer service or satisfaction
	• Product quality
	• Improved productivity

Exhibit II-2

Survey Methodology for Allocating Importance of Evaluation Categories

Evaluation Category	Relative Importance
Technical benefits	X%
Business benefits	Y%
	100%

Exhibit II-3

Importance of Evaluating Business Benefits: 1992 and 1997

Relative Importance of Business Benefits	Number of Respondents 1992	Number of Respondents 1997
0 - 15%	0	0
20 - 45%	6	4
50 - 65%	4	5
70 - 85%	10	10
90 - 100%	5	6
Total*	25	25

One respondent did not answer this question.

Exhibit II-4

Type of Evaluation Methodology Used

Predominant Evaluation Focus	Percent of Companies
Business benefits	
• Business analysis (cost/benefit)	23%
• Financial model	31%
• Subtotal	54%
Technical	23%
None/ad hoc	23%
	100%

Exhibit II-5

Extent of Use of a Single/Consistent Methodology

Type of Methodology	Percent of Respondents
Methodology is used	
Single/consistent	31%
Variable	46%
Methodology is not used	23%
	100%

Exhibit II-6

Focus of Evaluation and Type of Methodology

Focus of Evaluation	Percent of Companies Using: Single Methodology: Yes	No	No Method.	Total
Business benefits				
• Business analysis (cost/benefit)	4%	19%		23%
• Financial model	23%	8%		31%
• Subtotal	27%	27%		54%
Technical	4%	19%		23%
None/ad hoc			23%	23%
Total	31%	46%	23%	100%

Exhibit III-1

Usefulness of Business Benefit Evaluation

Is Business Benefit Evaluation Useful?	Percent of Respondents
Yes	69%
No	4%
Don't know/not sure	8%
Not applicable (not doing it)	19%
	100%

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Exhibit III-2

Relative Importance of Business Benefits Used to Evaluate Systems Investments

Potential Business Benefit	Percent Rating Benefit Important*
Increased productivity	81%
Improved responsiveness to customers	81%
Improved customer satisfaction	77%
Improved information	77%
Improved product/service quality	69%
Improved profit/cost savings	50%
Increased revenue	42%
Increased market share	31%

* Rated 4 or 5 on a scale of 5

Exhibit III-3

Categories of Business Benefits

	Type of Benefit	
IS Impact	Measurable	Difficult to Measure
Direct	• Measurable benefits- all or most attributable to IS initiatives • See Exhibit III-4 for examples	• IS impact is large but intangible • See Exhibit III-6 for examples
Indirect	• Measurable benefits but only part can be attributable to IS initiatives • See Exhibit III-5 for examples	• Benefits may be very hard to measure; only part of benefits is attributable to IS • See Exhibit III-7 for examples

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Exhibit III-4

Business Benefit Examples:

Type of Benefit: Measurable
Impact of IS: Direct

- Reduced user department costs where the decrease can be tracked to an IS change (new or modified software; more efficient hardware or communications). Examples:
    - Lower inventory levels, lowering working capital and interest expenses
    - Reduction in functional department personnel requirements as a result of system improvements. (This is in addition to any direct savings within the IS operation -- this type of benefit is classified as a technical, not a business, benefit.)
    - Less wastage/rework due to IS changes. (Note: This type of benefit often belongs in the "indirect" category because an IS initiative is often only one component in a series of changes.)
    - This type of benefit is often very easy to reduce to financial terms and to include in a financial model.

- Improved customer service that is primarily a result of an IS initiative. Examples:
    - Improved transaction cycle time (e.g., real time data base access compared to overnight updates)
    - Improved response time to customer queries.
    - Fewer out of stock situations for customer orders. This could be verified as increasing revenues; however, in this type of situation orders may only be delayed or different items may be ordered -- consequently, considerable analysis may be required to properly allocated benefits.

Exhibit III-5

Business Benefit Examples:

Type of Benefit: Measurable
Impact of IS: Indirect

- Increased revenue. Most revenue increases are difficult to trace back to specific IS initiatives. It is sometimes difficult to allocate a portion of a revenue improvement to IS, where IS is one part of a series of changes.

  However, the IS role is often crucial. When a functional department directly controls IS resources or IS budgets, the department will include IS changes as a line item in an overall improvement plan. In this type of very common situation, IS expenditures are part of an overall plan -- the IS expense, even if large, may only be 5-10% of the overall plan.

- Increased market share. Some companies are driven primarily by market share, rather than revenue increases. The comments made under "revenue" above apply to market share also.

- Improved product or service quality - when part of a company-wide quality program that emphasizes quality measurement. [Otherwise this benefit is in Exhibit III-8, "Indirect - Difficult to Measure"]

- Reduced expenditures over a broad category. An example of this is "business process re-engineering", where a company reexamines all of its business processes and changes or eliminates many of them. IS changes are often a critical elements in making the larger changes possible; however, it is often very difficult to measure that the IS contribution is.

- Improved customer service, where IS is one of several initiatives. An example is an improved customer order process, where IS is the backbone of changes, but many others are taking place at the same time.

- Benefits and changes in this category can be measured and often can have firm financial benefits attached to the changes.

  - The entire program of changes (IS and non-IS) can be costed and financial benefits estimated. These financial effects can be put into a financial model.

  - Trying to isolate the IS component involves arbitrary allocation of benefits. This produces technical problems in allocation. More importantly, it produces political problems since the different departments involved may each want a majority of benefit allocated to their own contribution.

Exhibit III-6

Business Benefit Examples:

Type of Benefit: Difficult to Measure
Impact of IS: Direct

- Improved information to internal departments and management.
  - This can be a real benefit, but is difficult to measure and almost impossible to place a financial value on. An example is a "customer information system", where all the activity for a particular customer is linked together.
  - The justification for many new applications often includes "better information" routinely, whether or not it is believed to be true (because it is difficult to prove one way or the other). This has tended to devalue a potentially important benefit.
- Improved satisfaction by internal users of IS services. In the mid-1980s this was a very important measure used by many central IS departments. Periodic surveys were used to determine customer satisfaction. However, internal satisfaction as a benefit is much less important now:
  - The survey results have proved difficult to compare over time. Satisfaction levels rise or fall for reasons, that on investigation, prove to be caused by the surveying process.
  - More importantly, high or low satisfaction can be caused by many factors. It is more important to identify the other factors and measure them separately.

Exhibit III-7

Business Benefit Examples:

Type of Benefit: Difficult to Measure
Impact of IS: Indirect

- Many people, both inside and outside of IS, often disregard this category, since even after going to the difficulty of trying to measure the benefit, the impact of the IS contribution is still indirect.

- However, the factors involved may be part of some companies' core culture or may be critical to a company's long term success. These types of initiatives include:
  - Helping a company become more knowledgeable about -- and more responsive to -- its customers' needs.
  - Improving product/service quality (where there is not an established mechanism for measuring quality).
  - Improving customer satisfaction in targeted areas.

- The IS commitment to these types of programs may be large; however, even if these types of programs are successful, tracking the IS contribution may be impossible.

- These kinds of projects are often initiated outside of the IS planning process and the IS component is specified after the overall plan has been approved.

Exhibit IV-1

Classification of Business Benefits

	Type of Benefit	
IS Impact	Measurable	Difficult to Measure
Direct	· Productivity · Cost savings	· Responsiveness · Satisfaction (internal) · Information
Indirect	· Productivity · Quality · Cost savings · Revenue · Market share	· Responsiveness · Satisfaction (external) · Quality

Exhibit IV-2

Applicability of Tools/Methodologies

	Type of Benefit	
IS Impact	Measurable	Difficult to Measure
Direct	Financial model	Cost/benefit
Indirect	Cost/benefit	(Usually not initiated by IS; part of general business planning)

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Exhibit IV-3

Financial Model: Mechanism

- Expected incremental expense by month or quarter
  - Hardware
  - Software packages
  - Internal personnel
  - Communications
  - External services (from professional services or systems integration vendors)
- Expected cost savings or revenue increases directly traceable to IS by month or quarter
- Five to seven year time horizon
- Investment must pass standard corporate tests. For example,
  - Discounted cash flow (e.g., positive value after five years at a 15% discount rate) or
  - Payback of investment after X years

Exhibit IV-4

Financial Model: Examples of Sources

- Very powerful financial planning software packages (usually used by financial planners) Examples:
    - Commander FDC (Comshare)
    - Fastar, Hyperion and Micro Control (IMRS)
    - Javelin (Information Resources)

- Less complex financial planning software packages. Examples:
    - LUCRAWIZ (via Software Publishing)
    - Encore Plus (Ferox Microsystems)
    - CF: Cash Flow Analysis (Superior Software)

- In-house developed systems that may be very complex or spreadsheet-driven

Exhibit IV-5

Additional Financial Model Information

Financial Model Vendor	See Appendix	Demonstration Diskette
Comshare	C	
IMRS	D	
Information Resources	E	X
Via Software Publishing	F	X
Ferox	G	
Superior Software	H	X

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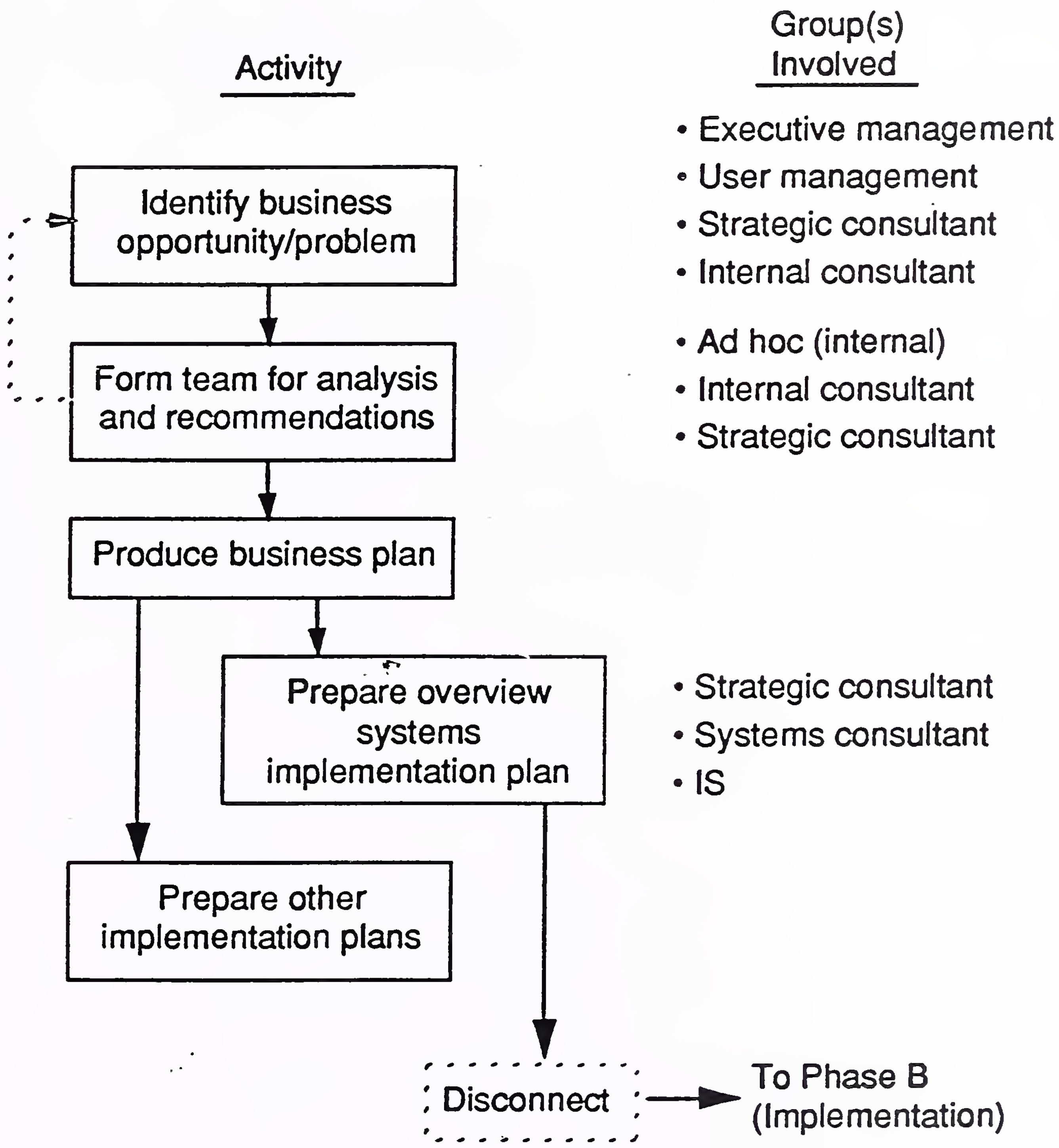
Exhibit IV-6

Strategic Planning/Consulting Preceding the Systems Implementation Process



Activity

Group(s) Involved

Identify business opportunity/problem

- Executive management
- User management
- Strategic consultant
- Internal consultant

Form team for analysis and recommendations

- Ad hoc (internal)
- Internal consultant
- Strategic consultant

Produce business plan

Prepare overview systems implementation plan

- Strategic consultant
- Systems consultant
- IS

Prepare other implementation plans

Disconnect

To Phase B (Implementation)

Exhibit IV-7

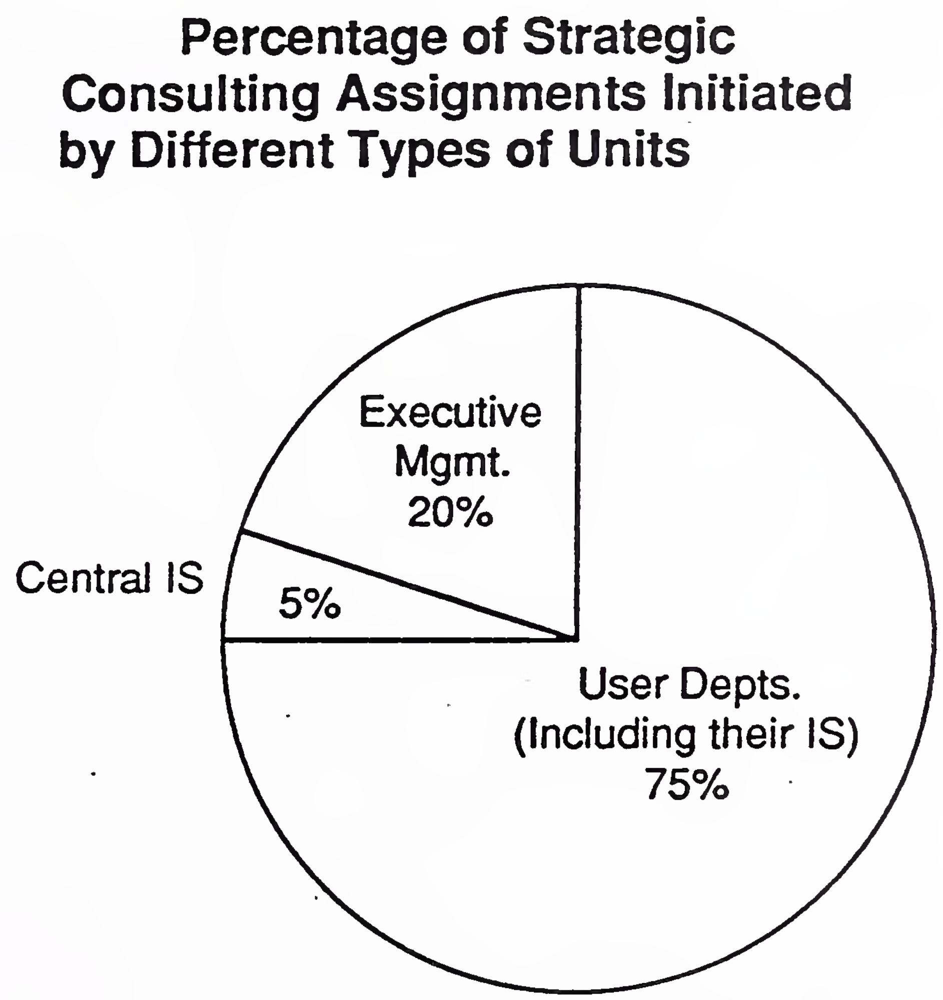
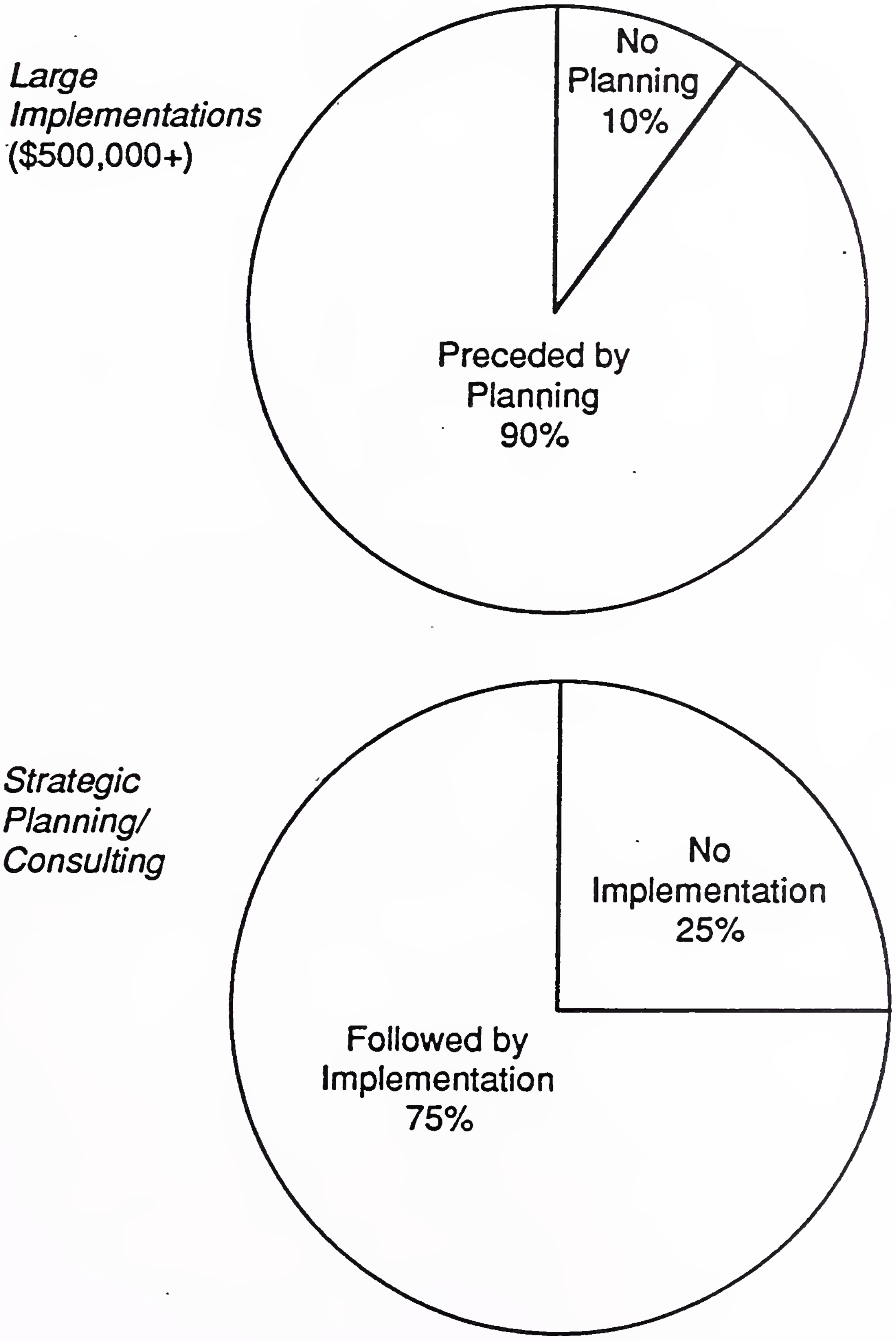

Percentage of Strategic Consulting Assignments Initiated by Different Types of Units
Executive Mgmt. 20%
Central IS
5%
User Depts. (Including their IS) 75%

Exhibit IV-8

Relationship of Planning and Implementation



Appendix A

APPENDIX A

METHODOLOGIES USED TO EVALUATE LARGE SYSTEMS INVESTMENTS

INPUT, an international research and consulting firm, is conducting a study on the methodologies used by firms to justify large systems-related investments. Neither the identity of you or your firm will be published. In return for your taking part in our study we will supply you with a summary of the study's findings at no charge.

1. In the last three years, what were the largest systems-related investments that were made (type of project, dollar amount)? [This can be hardware, software, outside services or some combination.]

   ____

   ____

   ____

2. What was the chief justification for each of these? [If more than five, limit question to top five investments.]

   ____

   ____

   ____

3. Was there a single methodology used to evaluate systems investments?

   Yes __________ No __________

   - Why?

     ____

     ____

   - If yes, please describe the methodology briefly
     [and then go to question _____]

     ____

     ____

- If no, are there several methodologies in use?

  Yes ________ No ________

  - Why?

    ____

    ____

  - If yes, please describe.

    ____

    ____

4. In evaluating systems investments there are two general types of criteria that are used, technical benefits and business benefits. [Use definitions below if necessary.]

   - Technical benefits examples: IS cost savings, improved processing times, improving system quality, etc.
   - Business benefits examples: Revenue or profit increases, improved customer service or satisfaction, improved productivity or product quality.

   In making investment evaluations, what is the split in the importance between technical and business benefits (allocating the two between 100%)? What was this split 5 years ago? What do you expect it to be in 5 years?

	1992	1987	1997
Technical	______	______	______
Business	______	______	______
	100%	100%	100%

What is causing this change?

____

____

____

5. Which business benefits are most important in evaluating systems investments? [Check off and add to bottom, if not on the list].

How important are these other factors on a scale of 1 to 5, with 5 being most important? [Read factors from list that were not checked off.]

	Most Imp.	**Rating**
Revenue	__________	__________
Profit	__________	__________
Market Share	__________	__________
Responsiveness to customers	__________	__________
Customer satisfaction	__________	__________
Product/service quality	__________	__________
Productivity	__________	__________
Improved information (to management or customers)	__________	__________
Other________________	__________	__________
Other________________	__________	__________

6. For the factors that were checked off or received a rating of 4 or 5: You rated _____ as being important. How does your firm measure these benefits now? What improvements are you planning to make?

Factor	**Measurement**	**Improvement**
Revenue	______________________ ______________________	______________________ ______________________
Profit	______________________ ______________________	______________________ ______________________
Market share	______________________ ______________________	______________________ ______________________
Responsiveness to customers	______________________ ______________________	______________________ ______________________
Customer satisfaction	______________________ ______________________	______________________ ______________________
Product/service quality	______________________ ______________________	______________________ ______________________
Productivity	______________________ ______________________	______________________ ______________________
Improved information (to management or customers)	______________________ ______________________	______________________ ______________________
Other______________	______________________ ______________________	______________________ ______________________
Other______________	______________________ ______________________	______________________ ______________________

7. What type of tools or formal methodologies does your firm use in making evaluations or justifications for major systems investments?

____

____

____

If a formal methodology exists: Could you supply us with a copy (with your company's identification omitted, if you wish)?

____

8. Overall, how useful has your firm found using business benefit evaluations for major systems investments?

____

____

____

What changes are being made or should be made to the process?

____

____

____

9. What advice would you give a company that was planning to use business benefits as a basis for evaluating systems investments?

____

____

____

Thank you for participating in our survey.

Appendix B

CONFIDENTIAL

NPUT Questionnaire

Project Code/Catalog No. YNIFT ☐☐☐☐☐☐☐☐☐☐☐

udy Title: Lg Sy. Methodologies

Interviewer Initials ☐☐☐

pe of Interview:

Interview Date ☐☐☐☐☐☐

☐ Vendor ☐ Telephone

QC Initials ☐☐☐

☐ User ☐ On-Site

QC Date ☐☐☐☐☐☐

☐ Other ☐ Mail

Data Entry Initials ☐☐☐

Data Entry Date ☐☐☐☐☐☐

Company: ____________________

SIC code
Company Type: ____________________

Address: ____________________

Sales: ____________________

____

# Employees: ____________________

____

ity/State/Zip: ____________________

Main Phone: ____/______-__________

FAX # ____________________

spondent(s):

Name	Title	Phone/Ext.

ferrals:

____

____

lustry (User Interviews Only):

- ☐ Discrete Mfg.
- ☐ Process Mfg.
- ☐ Transportation
- ☐ Utilities
- ☐ Communications
- ☐ Retail
- ☐ Wholesale
- ☐ Banking/Finance
- ☐ Insurance
- ☐ Medical
- ☐ Services
- ☐ Education
- ☐ Federal Government
- ☐ State & Local Government
- ☐ Consumer/Home
- ☐ Other Industry Specific
- ☐ Cross-Industry

ments:

____

____

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- **Software and Services Vendors**
- **U.S. Federal Government**
  - Procurement Plans (PAR)
  - Forecasts
  - Awards (FAIT)
- **Commercial Application (LEADS)**

CUSTOM PROJECTS

For Vendors—analyze:

- **Market strategies and tactics**
- **Product/service opportunities**
- **Customer satisfaction levels**
- **Competitive positioning**
- **Acquisition targets**

For Buyers—evaluate:

- **Specific vendor capabilities**
- **Outsourcing options**
- **Systems plans**
- **Peer position**

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